
International Standard



6989

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Textile fibres — Determination of length and length distribution of staple fibres (by measurement of single fibres)

Fibres textiles — Détermination de la longueur et de la distribution de longueur des fibres discontinues (par le mesurage de fibres individuelles)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6989 was developed by Technical Committee ISO/TC 38, *Textiles*, and was circulated to the member bodies in November 1979.

It has been approved by the member bodies of the following countries :

Australia	France	Portugal
Belgium	Germany, F.R.	Romania
Brazil	Ghana	South Africa, Rep. of
Bulgaria	India	Spain
Canada	Israel	Sweden
China	Italy	Switzerland
Cyprus	Korea, Rep. of	Turkey
Czechoslovakia	Netherlands	United Kingdom
Denmark	New Zealand	USA
Egypt, Arab Rep. of	Norway	
Finland	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Hungary
Japan
USSR

Textile fibres — Determination of length and length distribution of staple fibres (by measurement of single fibres)

0 Introduction

This International Standard is intended to replace two existing International Standards, ISO 270, *Textile fibres — Determination of fibre length by measuring individual fibres*, and ISO 1822, *Wool — Determination of fibre length using a single-fibre length measuring machine*.

The determination of fibre length by measuring the length of individual fibres is advocated for the following reasons :

- a) the fibre length is better defined than by measurement of the fibre held in combs;
- b) this is a general method, and its range of application is not limited by the length or diameter of the fibres tested;
- c) the risk of accidental or systematic errors is less than with other methods, particularly with collective measurements of the length of a group of fibres.

It should be noted that measurements by this method are made on straightened fibres with the crimp removed, and may give different results from those obtained by other methods of measurement. In the case of fibres which have inherent crimp, straightening the fibres may also include errors due to stretching. Nevertheless, other methods (for example, the comb sorter) are quicker for some fibres (for example, cotton or other short fibres), and for this reason may be preferred, for routine tests, to the more exact method of measuring individual fibre lengths.

ISO 2646, *Wool — Measurement of the length of fibres processed on the worsted system, using a fibre diagram machine*, may be used for the determination of the distribution of the length of fibres by measurement carried out on specimens of sliver processed on the worsted system.

1 Scope and field of application

This International Standard specifies

- three methods for determination of the length of staple fibres by measuring individual fibres;
- different methods of expressing the length distribution from values obtained by measurement of individual fibres.

It applies to all discontinuous textile fibres, except those in which strong inherent crimp would render the procedure inapplicable. It does not apply to fibrous bundles of bast fibres.

2 References

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*.

ISO 1130, *Textile fibres — Some methods of sampling for testing*.

3 Principle

Measurement of the individual length of each fibre

- method A : on a straightened fibre on a graduated rule, under a light tension applied with the aid of forceps and grease. This method shall be used for reference in cases of dispute, unless strong inherent crimp renders it inapplicable.
- method B : by measuring by use of an opisometer the length of the image of the fibre enlarged by projection on a screen.
- method C : by use of a semi-mechanical device.

Expression of the length distribution of fibres from the values of fibre length, classing the fibres into groups of length.

4 Apparatus and materials

4.1 Method A (Reference method)

4.1.1 Polished glass plate, with a millimetre scale engraved or photographed on it.

4.1.2 Pointed forceps.

4.1.3 White petroleum jelly or liquid paraffin.

4.2 Method B

4.2.1 Projector and screen, with means for mounting fibres on the projector slide.

4.2.2 Opisometer and calibration slide, or other means for determining projector magnification.

4.2.3 White petroleum jelly or liquid paraffin.